

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
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Hiroshi Yamazaki et al.)	Group Art Unit: 3765
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Application No.: 10/541,397)	Examiner: Shaun R. Hurley
)	
Filed: July 1, 2005)	
)	
For: Sewing Thread and Sewn Fabric Products)	Confirmation No.: 6309
)	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

REPLY TO OFFICE ACTION

In the Office Action of February 29, 2008, the Examiner rejected claims 1-5 under 35 U.S.C. §103(a) for being unpatentable over U.S. Patent No. 6,458,455 to Hernandez et al., hereafter Hernandez.

The withdrawal of the previous ground of rejection of the claims over Hietpas is appreciated. However, it is believed the claims are not obvious over Hernandez either for the following reasons.

As previously discussed, an object of the present invention is to provide a sewing thread having high stretchability and being excellent in lock stitch sewing performance.

In making the rejection over Hernandez the Examiner comments that PTT "inherently has [a] breaking elongation of greater than 100%." However, the Examiner has cited no evidence to support his conclusion.

Hernandez relates to a PTT tetrachannel cross-section staple fiber and as disclosed, in column 6, lines 65-67, the elongation to break is 55% or less and normally 20% or more.

Though not relied on in the rejection, applicants would like to point out that Fleri et al. only discloses a polymer blend of PTT and an elastomeric polyester. There is no disclosure regarding breaking elongation.

Regarding the noted "inherent" properties, the Examiner is apparently relying on the POLYMER article, although it too was not cited in the rejection. This reference discloses a polymer structure and property of PTT obtained by a melt spinning process with increased take-up velocity. According to applicants, as is apparent from Fig. 11, which shows the relationship between take-up velocity and breaking elongation, the breaking elongation is 100% or more only when the take-up velocity is about 3 km/min or less.

Moreover, as is apparent from Fig. 9 showing an S-S curve, there is a flat portion in the S-S curve when the take-up velocity is 4 km/min or less. According to applicants, the flat portion in the S-S curve means that the obtained PTT fiber has a partially amorphous structure. A PTT fiber having a partially amorphous structure cannot directly be used as a filament or a short fiber. Then it is necessary to draw the PTT fiber in a post step. The above matters are commonly known to one of ordinary skill in the art.

Accordingly, it is submitted that POLYMER teaches only that a PTT fiber produced at a take-up velocity of 6 km/min or more is usable for a staple fiber because

then the PTT fiber does not have any amorphous structure. However, such a PTT fiber has a breaking elongation of only about 60% or less as shown in Fig. 11.

Nor does the Journal of Applied Polymer Science, hereafter Journal, disclose the alleged "inherent" property of PTT. It only discloses in Table 1 a breaking elongation of a PTT fiber of 51.1%.

Accordingly, it is submitted that none of the documents, including the three documents only made of record, disclose that PTT fiber inherently has a breaking elongation of greater than 100%. On the contrary, the documents only teach that a PTT fiber usually has a breaking elongation of 60% or less.

The Examiner also comments that PTT fibers "inherently" have "instantaneous elastic recovery at 5% elongation of greater than 65%, at 20% elongation of greater than 60[%], and at 30% [elongation] of greater than 60%," i.e., the limitations of claims 1-3 respectively. It is believed the Examiner is basing this on the Journal reference which discloses instantaneous elastic recovery of PTT filament. However, according to applicants, it is well known that a PTT filament has excellent instantaneous elastic recovery.

However, the instantaneous elastic recovery defined in the present claims is the instantaneous elastic recovery of a sewing thread, and is not that of a staple fiber (a raw material of a sewing thread) or of a short fiber (a raw material of a staple fiber). Therefore, the instantaneous elastic recovery defined in the present claims is not that of a PTT filament as disclosed in the Journal.

It is well known that the instantaneous elastic recovery of a sewing thread is remarkably influenced by physical, dynamic or thermal treatment during the process for producing the sewing thread from the starting material of a short fiber.

Therefore, one of ordinary skill in the art would not expect the instantaneous elastic recovery of a sewing thread to be that of the claims based only on the disclosure in the Journal of the instantaneous elastic recovery of a PTT filament.

The Examiner further states that one of ordinary skill in the art would have been capable of determining the correct amounts (of breaking elongation and instantaneous elastic recovery) through routine experimentation, given the intended use as a sewing thread, and that blends of PTT and cotton would be obvious in order to lower the breaking elongation and instantaneous elastic recovery. However, applicants submit that the above statement of the Examiner is not correct as explained below.

As disclosed on page 4, lines 11 to 25 of the specification, the present inventors discovered that breaking elongation greatly contributes to imparting a stretchability to the seams, and have discovered that suppression of an instantaneous elastic recovery in a low elongation region stabilizes a loop formation of the sewing thread resulting in improving lock stitch sewing performance at high speed. That is, an object of the present invention is to provide a sewing thread having both excellent stretchability of the seams and excellent lock stitch sewing performance at high speed. Such a sewing thread has never been provided before.

There is no disclosure or suggestion in any of the cited documents regarding a sewing thread having both high seam stretchability and excellent lock stitch sewing

performance at high speed. Moreover, there is no disclosure regarding its relation to instantaneous elastic recovery and breaking elongation.

As explained above, the ordinary skilled artisan would not know to control breaking elongation and instantaneous elastic recovery in order to obtain the sewing thread of the present invention. Moreover, he would not easily be capable of determining the correct amounts of such properties through routine experimentation, even if it was known that the intended use was a sewing thread.

It is submitted that all of the Examiner's assumptions are, therefore, based on hindsight from a reading of applicants' specification and not from anything taught by the cited documents. As noted in M.P.E.P. §2142 to establish prima facie obviousness, "impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of facts gleaned from the prior art." (Emphasis added).

In the present invention, the method for controlling the breaking elongation and instantaneous elastic recovery of a sewing thread is not because a blend of a PTT fiber and another fiber such as cotton.

Rather, the sewing thread of the present invention is obtained by a method where a staple fiber containing a PTT staple fiber of 30 wt% or more is doubled and twisted to form a yarn package, and then the yarn package is wet treated at 90°C or more (see page 19, lines 21 to 31 of the specification).

Moreover, as disclosed in Example 1, the sewing thread of the present invention may consist of a PTT fiber alone. In other words, the sewing thread can consist of a PTT staple fiber of 100 wt%. This is consistent with the claims.

For all of the above reasons, it is submitted that the invention of claims 1-5 is not obvious over Hernandez. Its withdrawal as a ground of rejection of the claims and their allowance is therefore requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: August 26, 2008

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